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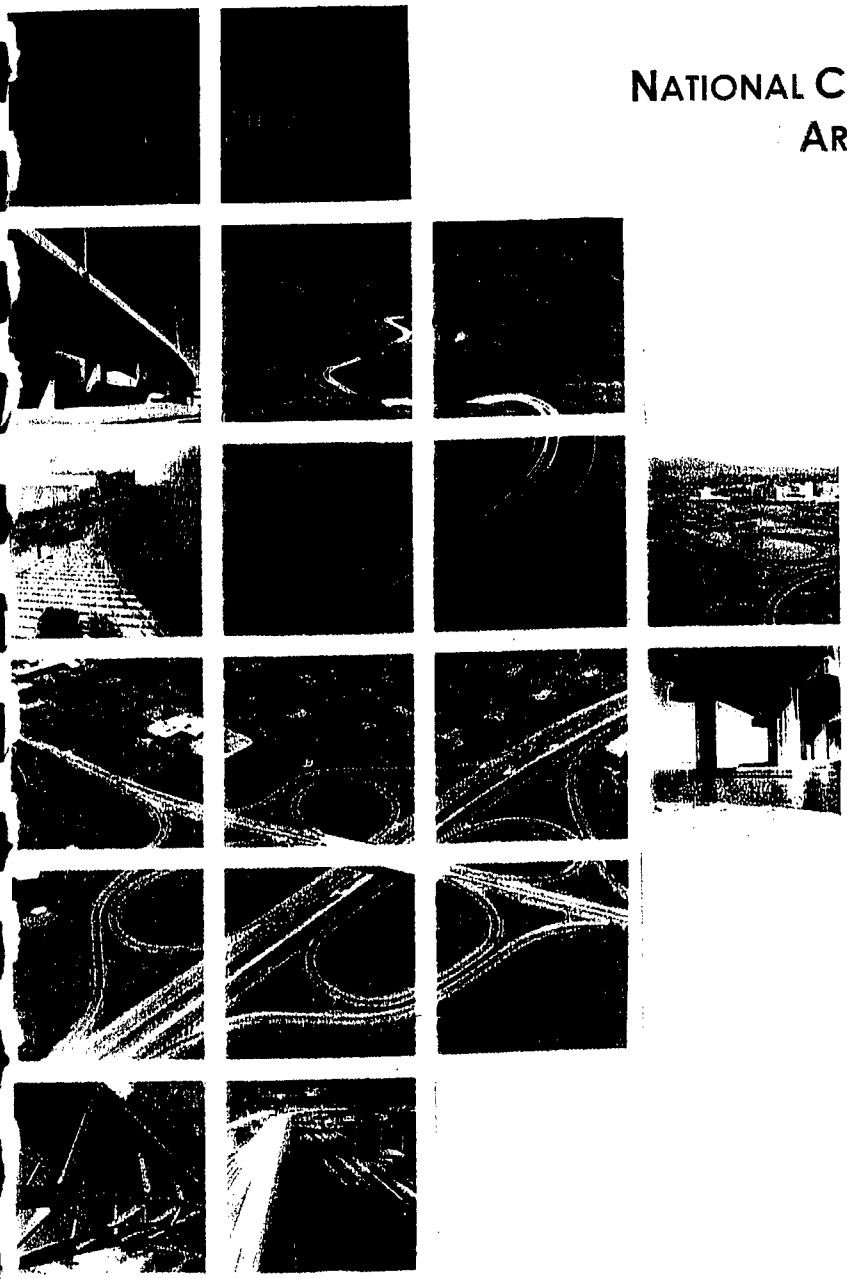
PROGRAMA METRÓPOLIS

NATIONAL COMMISSION OF THE METROPOLITAN AREA OF BUENOS AIRES (CONAMBA)

MINISTERIO DEL INTERIOR

TRAFFIC MANAGEMENT SYSTEM



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RECOMMENDATIONS
FINAL REPORT

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RECOMMENDATIONS TO OPTIMIZE TRANSPORTATION IN THE CITY OF BUENOS AIRES

RECOMMENDATIONS TO OPTIMIZE TRANSPORTATION IN THE CITY OF BUENOS AIRES

1. *BACKGROUND*

Buenos Aires, the largest and the principal urban conglomerate in Argentina, is one of the most important metropolises in Latin America. It is the center for government, economy, commerce, finance, industry, and culture in Argentina. With a population of over eleven million (approximately one-third of the total population of Argentina) and a land area of approximately 4,500 square kilometers, it comprises 25 municipalities of the province of Buenos Aires in addition to the Autonomous City of Buenos Aires.

The total population includes approximately three million living in Capital Federal, which figure has remained constant for over 30 years, and the remainder living in neighboring communities of the province of Buenos Aires. A recent study conducted under the Metropolis Project predicts that the total population of Gran Buenos Aires will increase to 13 million by the end of the decade.

A modal split of such movements indicates that public transportation predominates (accounting for approximately 65%), whereas private cars show minor, though growing share.

Mass public transportation is provided by buses (colectivos) operating on 299 routes, a 5-line sub-way system, one Premetro line and a 7-line commuter rail network. Complementarily, the city is served by approximately 50.000 taxicabs, 15.000 chauffered cars (limousines), approximately 1800 buses providing the so-called free supply service and estimated 2.5 million private cars.

Private car transportation

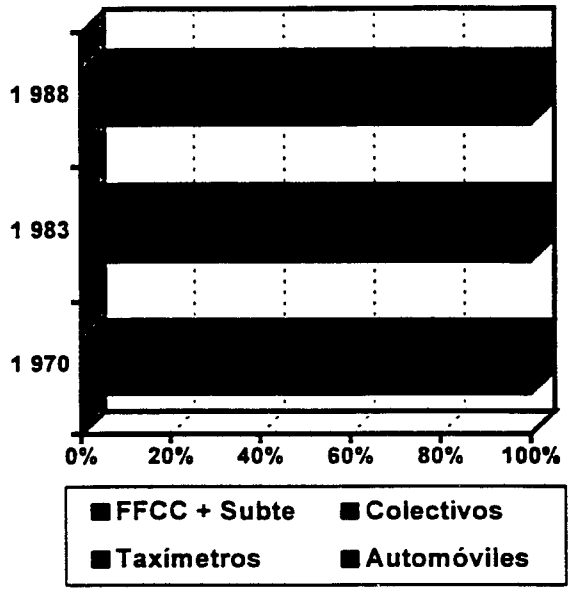
The private car fleet in the Region exceeds 2.5 million units, accounting for over 35% of daily trips.

Private car growth in the last five-year period has been particularly relevant, involving a transfer of users from public to private modes. Certain studies estimate that from 1991 to 1995 private car share grew more than 30% in modal trip distribution, principally at the expense of bus transportation.

Historical analysis of urban transportation market (%)				
Mode	**1970**	**1983**	**1988**	**1996**
Railway +subway	13.5	8.4	8.8	9.2%
Buses	59.0	54.0	53.8	46.0%
Taxicabs	7.4	8.9	9.4	9.8%
Cars	16.7	25.3	28.1	35.0%

Modal split changes

- Rail modes lost 35% of their market share in 20 years up to early 90's, and are now gradually increasing their share.
- Private car modes more than doubled their share.
- The slightly declining share of buses is maintained.



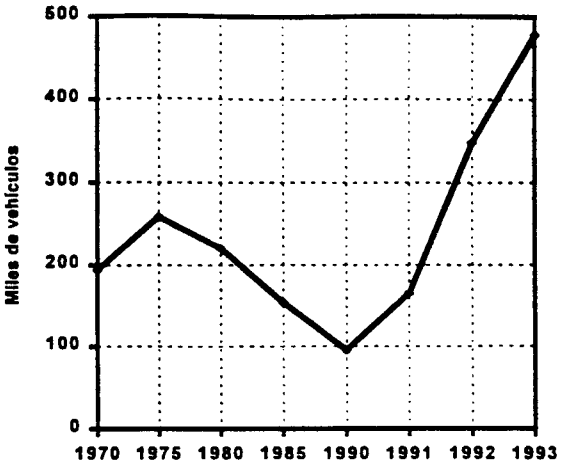
The historical trend indicates that high car sale levels recorded from the beginning of the 90's are likely to be maintained.

Period	*Annual Sales*
1970/1975	*194 418*
1975/1980	*259 782*
1980/1985	*221 061*
1985/1990	*154 360*

Year	*Annual Sales*
1990	*95 887*
1991	*165 775*
1992	*348 363*
1993	*478 000*

Main Car Sales Indicators

- Five-fold increase in sales in three years.
- Future trend stabilizes at high levels.



In this connection, highway network improvements, particularly in the network of Access Highways to Buenos Aires city, result in improved traffic operations, inducing a major shift towards individual transportation.

It should be noted that the following access highways will be completed before 2000:

- Acceso Norte - Av. Gral. Paz with 94.5 and 24.1 km total length, respectively.
- Acceso Oeste with 56.7 km total length.
- Autopista Ricchieri – Ezeiza - Cañuelas, with 60.1 km total length.
- Autopista Buenos Aires - La Plata, with 63.3 km total length.

Surface Rail Transportation

The rail sub-system, dating back to 1857, is wholly operated by private concession holders. It accounts for the movement of close to 1.1 million passengers/day.

The structure of a basically radial network converging into the central area of the region consists of seven lines with a total length of 901 km, 164 (18%) of which are electrified.

The network comprises 268 stations and 5 terminal stations located in downtown Buenos Aires or adjacent to it: Retiro (terminal station of Bme. Mitre, Gral San Martín and Gral. Belgrano Norte rail lines), Constitución (terminal station of Ferrocarril Gral. Roca), Chacarita (terminal station of Ferrocarril Urquiza), Once (terminal station of Ferrocarril Sarmiento) and Estación Buenos Aires (terminal station of Ferrocarril Gral. Belgrano Sur).

The railroad fleet consists of approximately 1400 cars. In addition, the different layouts are built at grade level, with very few sections in viaduct, embankment, or ditch, thus significantly interfering with the urban roadway network.

The technical characteristics of the network vary according to the line considered. Hence, the Sarmiento, Mitre, Roca and San Martín lines are wide gauge (1.676 m), the Urquiza line is medium gauge (1.435 m) and the Belgrano Norte and Sur are narrow gauge (1.000 m).

Concerning traction, the Mitre, Sarmiento, Urquiza and Roca Lines (Ezeiza and Glew branches), are electrified, while San Martín and Belgrano Norte and Sur Lines feature diesel electric traction, as does the La Plata branch of Roca line.

Service frequencies vary according to the technical characteristics of the equipment involved (signaling, infrastructure, tractive and hauled fleet, etc.), reaching 5 minutes during peak hours, in certain cases.

It should be noted that rail services are benefited with direct State subsidies.

Underground rail transportation (sub-way)

Started in 1913 the underground rail transportation sub-system is operated by a private concession holder since 1994 and moves approximately 500 thousand passengers a day. The network consists of 5 lines (4 radial and 1 circumferential lines and a grade connection, the Premetro, with 45 km total length and 77 stations.

The rolling stock, consisting of approximately 300 cars, is clearly heterogeneous as far as technical characteristics is concerned, the only common trait being the 1.435 m gauge, with different clearance and platform heights. In addition, they feathre three different supply systems (1100V and 1500 V aerial lines, and a third 550 V rail).

Concerning service frequencies, some lines operate units at 3 minute intervals at peak hours.

Public motor vehicle transportation

The bus sub-system presents a predominant (though declining) share in public transportation traffic, moving more than 8 million passengers a day.

Operated by almost 200 private companies, the bus transportation network presents an extended territorial reach, making up an overall network of approximately 25,500 Km.

The bus fleet consists of approximately 15,000 vehicles, a majority of which are diesel-fueled units with an approximate capacity of 30 passengers seated and 50 standing.

Service frequencies are generally high, with intervals between services lower than 2 minutes in certain cases.

It should be noted that no State subsidies whatsoever assist the motor vehicle transportation service.

Non-scheduled Transportation

The Transportation supply in the region is completed with a set of commercial services which while not meeting the generally accepted requirements to be considered as a Public Service, they satisfy a segment of the population's transportation demand through specific operating modalities.

This category of services includes taxicabs, chauffered cars (limousines) and free supply service (charters, hired services, etc.).

The taxicab supply consists of approximately 50,000 units, fueled in a majority of cases by compressed natural gas.

Although no recent specific studies are available, estimates indicate that they move approximately 1 million passengers/day, which added to other non-regular modes total an estimated daily movement of approximately 1.7 million passengers/day.

The limousine service shows significant growth in the last few years, from a marginal service in the past to an actual option moving tens of thousand users at present.

The fleet is estimated in approximately 15,000 units providing door-to-door transportation service. In Capital Federal only, more than 600 limousine services are registered.

In the case of both taxicabs and limousine services, the jurisdictional authority is the relevant Municipality. Differences are observed among them concerning the rules regulating the services.

The free supply service) (charters, hired services, etc.) represent a novelty in the transportation supply of the region. They consist of different-sized passenger vehicles, from long distance 50 or more seat buses, down to 12-passenger mini-bus vehicles.

The vehicles serve direct routes between origin-destination pairs, with a seat reserved for each passenger, and eventually additional comfort features (music, air conditioning, etc.).

Approximately 1,800 vehicles are licensed for some 2,200 services between different origin-destination pairs.

2. *RECOMMENDED MEASURES TO OPTIMIZE TRANSPORTATION IN BUENOS AIRES CITY*

The Louis Berger International, Inc. – IBI Group – UBATEC Consortium has developed a series of recommendations, partly based on the Traffic Management Project proposal for the city of Buenos Aires, and partly on studies conducted in the framework of this project.

A series of measures is formulated below with the purpose of introducing a change in driving modalities and in the characteristics of the infrastructure available.

Changes in driving rules and drivers' habits

The roadway infrastructure of Buenos Aires was not the result of a planned strategy but developed and spontaneously consolidated accompanying the expansion of the city.

This process explains the existence of very narrow streets in downtown Buenos Aires and the absence of avenues permitting fluid communication with the different neighborhoods.

The well known works to expand central avenues were completed only in the 80's, at which time the construction of urban highways on three axis commenced, namely:

- North: Arturo Illia urban highway.
- West: 25 de Mayo and Perito Moreno highways.
- South: La Plata – Buenos Aires and 9 de Julio Sur.

The coastal roadway connection is not completed yet, and the General Paz Avenue can be considered as the cross connection with above urban highways.

The above mentioned development of Buenos Aires city roadway infrastructure places a strong limitation on transport operations and affects the population's life quality. The recommended measures are therefore focused on optimizing the use of existing facilities rather than on proposing to build or expand the transportation network. Accordingly, the measures below are the most significant ones to make the city traffic more orderly while increasing traffic safety ratios:

- Promote the improved use of the existing roadway network through the design of reversible lanes, a network of exclusive lanes for public passenger transportation and lanes for high occupancy vehicles.

- Implementation of new rules for the loading/unloading of goods ensuring the strict enforcement of current regulations.

City Traffic Management

In the layout of colonial cities, no priority was given to arterial streets, instead, the whole chessboard was given the same rank. In this century, some streets were enlarged into avenues, and in fact priority was given to arterial width.

This type of differenciation proves to be insufficient since the main traffic does not flow along existing avenues. Accordingly, a principal and a secondary street network should be urgently determined after a thorough examination of population movements.

Streets which are currently considered as principal streets feature non-uniform signaling due to the various signaling criteria used. As far a lighting is concerned, principal streets are not differentiated from secondary ones and traffic signal coordination, if any, responds to old criteria taken from obsolete technologies which are no longer used in the developed world. It can be concluded that no categorization currently exists in the vertical and horizontal signaling, permitting a rapid identification of street categories by users.

Once the principal street network is determined it should be signaled accordingly for street differentials to be easily recognized by drivers. The most significant measures to be taken are:

- Signaling and network optimization: a survey should be conducted of traffic signals and of the relevant traffic control equipment. Signal coordination Plan.

- A horizontal marking and vertical signaling Program giving priority to arterial streets where traffic has been categorized.

- After the categorization of the street network (through the upgrading of current network) implementation of a program to optimize the use thereof: of an exclusive bus lane network, reversible lanes in response to existing actual traffic flows, high occupancy lanes, etc.

Inter-relationship and share of different transportation modes

Even though the Buenos Aires city traffic is characterized by the presence of a significant number of private automobiles (with an approximate 35% share of total transportation market), their presence in downtown Buenos Aires is reduced, basically during peak hours. Surveys have been concurrently conducted in downtown Buenos Aires which reveal that taxicab share in certain streets amounts to 70% of the traffic, producing congestion and ensuing environmental pollution.

To address a traffic management process, the steps below are necessary:

- To promote the use of public transportation, implementing a network of exclusive bus lanes and the expansion of the sub-way network.

- To limit the number of taxicabs and manage their operations promoting the use of fixed taxicab stands and radio-telephone instead of slow cruising around searching for passengers. Annex I contains a full taxicab management proposal for the greater downtown area (macrocentro) of Buenos city.

Consequences of the absence of urban planning

As already mentioned earlier in this section, city growth was not planned but spontaneously responded to population needs. Car parking is the most relevant problem among those usually found in the city. The proposed measures to address car parking problems are:

- Review the parking policy and the objectives thereof. A car parking policy will be implemented together with monitoring and control of compliance with parking rules to ensure smooth traffic flows.

- Development and Updating of Parking lot inventories. Review of parking building plans, coordination between Regional Development and Parking Needs and Monitoring and Enforcement of Parking Rules.

- Promote an active policy of car and heavy vehicle removal from the streets through the use of car towing equipment.

Pedestrians

Although a significant number of trips is on foot, no action has been taken so far relating to facilities available for pedestrians and their safety, being there no Government agency in charge of pedestrians-related matters. Actions to be taken shall include: Monitoring of pedestrian traffic flows, review of streets with high pedestrian presence rates, sidewalk/pavement width ratios, sidewalk maintenance condition, pedestrian islands, pedestrian crossing markings. Study the inclusion of streets for pedestrian use only in the central area of town.

3. *Short-term Measures*

The following recommendations can be made on the basis of the aspects discussed above:

- Roadway infrastructure Maintenance Plan. Development of a roadway maintenance plan based on the categorization of arterial streets, giving priority to works on streets principally categorized for traffic, where the pavement should be kept in good maintenance condition, with vertical and horizontal signaling, traffic light coordination (if necessary), adequate lighting, parking restrictions, etc.

  A pavement marking program should be rapidly implemented in the principal roadways both in Capital Federal and in the Greater Buenos Aires area, since no campaign to enforce traffic rules can be implemented unless markings are in place.

- Pedestrian only streets or streets for pedestrian use only within certain hours. Determine arterial streets for pedestrian use in downtown and greater downtown (micro and macrocentro areas in conjunction with determining an exclusive bus lane network.

- Monitoring the correct use of sidewalks. The objective sought is to relieve pedestrians of discomfort as much as possible.

  Visual inspections revealed the existence of very many obstacles which make pedestrian traffic difficult. In the downtown area, where sidewalks are very narrow, this situation aggravates.

  The presence of obstacles in sidewalks force pedestrians to step down on to the pavement, with the ensuing increase of personal risk due to the existence of continuously intense traffic.

  On the other hand, heavy traffic operations (particularly buses) on narrow streets (such as Maipu, Esmeralda, Sulpacha, Tucumán, Viamonte, Paraguay, etc.) turn pedestrian circulation along them dangerous. Such traffic should be derived to streets with exclusive bus lanes which, in addition, should ensure safer pedestrian traffic, thus concentrating this traffic on very few streets (which shall be determined on the basis of their capacity vis-à-vis the demand recorded).

- Categorization of City traffic networks. As a result of determining principal, primary and secondary networks, many streets will no longer be used for passer-by traffic but only for access to the neighborhoods in which they are located. To avoid the use of such streets by another type of traffic, we recommend changing the direction of traffic every few blocks, thus interrupting continuity and diverting traffic to the principal streets.

- Heavy traffic network. Development of a network which shall be geometrically and structurally adapted to truck movements. Such development will include a sub-network for transportation of hazardous substances.

  The current network is confusing, failing to take full advantage of the existing network of access highways to the city. Such network should be conveniently re-structured placing special emphasis on traffic concentration on the main corridors.

  Aside from discussing this traffic growth, which is unlikely to exceed 6%/annum, the enforcement of an operating scheme concurrent with private traffic is not advisable.

  One of the main problems affecting downtown Buenos Aires is that produced by the access of heavy traffic to the port. For the above mentioned reasons, we recommend to divert heavy traffic to Arturo Illia and Coastal Highways until the Puerto Nuevo access exchange, located near the Retiro Bus Terminal as an alternative solution for the transportation of heavy loads to and from the port.

  Recommended traffic management measures include the following:

  - Setting up a freight transfer yard inside the port area to allow for a continuity of load transfer operations without interfering with vehicle traffic on access highways.
  - Setting up freight transfer yards associated with the main access highways to the city of Buenos Aires, so as not to overload them in the hours immediately after the lifting of the ban on heavy vehicles.

  In addition to becoming an interesting business in itself, the proposal to set up freight transfer yards may be a remarkable alternative to alleviate congestion produced by heavy traffic in town, by reducing the intimidating size of trucks in the urban area.

- Network of exclusive lanes. The objective of giving priority to public transportation makes it necessary to establish streets or lanes only for such movements.

  A project developed by the former Federal Secretariat of Transportation proposed a network of exclusive lanes within the city. In our opinion, some of the streets proposed are not suitable for such traffic. A proper study based on actual passenger traffic by bus should be conducted whereby the required pavement size should be designed to ensure comfortable and safe transportation, both for passengers and pedestrians.

- High occupancy lanes. To induce better utilization of roadway capacity and rationalize the use of private cars, the possibility of implementing such lanes will be examined.

  In principle, the most interesting alternative to implement such proposal appears to be the axis defined by Lugones Avenue -featuring some congestion problems during morning peak hours- due to having very few crossings and pseudo-highway characteristics which make the control of proposed regulations easier. Such control may be based on technologies such as those designed for Stage I of this study, or else on visual means or employing rudimentary technologies to begin with.

- Development of a new parking policy. Such policy shall contemplate a differential rate based on demand, the encouragement of transfers to mass transportation modes, parking restrictions or bans at given arterial streets and establishment of zone quotas for new undertakings.

  The parking policy must not respond to demand requirements in the area but to the surrounding roadway supply, in order for streets not to be saturated with the occupancy of space required for traffic flows.

  A significant number of anomalous parking occurrences were found on the streets. The problem is by no means restricted to the greater downtown area, but is observed and even aggravates outside that area, mainly in Barrio Norte, Palermo and Belgrano.

  In such districts there is a habit to park on both sides of the pavement the whole day, including avenues and the most congested corridors. In addition, the simultaneous loading and unloading of goods and passengers (particularly by taxicabs) is observed, with apparently no control by the relevant authorities.

In the central area of town, although two companies are responsible for the enforcement of parking rules, the results are, in the light of our findings, poor. For these reasons, we recommend a more strict control and the extension thereof to districts adjacent to the central area, specifically to the above mentioned ones and to Almagro and Caballito.

No parking policy may be implemented unless in conjunction with a consistent transportation policy encouraging the use of public transportation at the expense of private cars, since the enforcement of a restrictive policy will cause very many problems to people. Accordingly, our proposal consists in gradually implementing a ban to parking on the pavement to the extent that public transportation mode conditions improve.

In addition, new parking time parameters should be established. At present, vehicles are allowed to park for hours in the same location, while no space is allotted for people who require short term parking (15 to 30 minutes). So parking space should be contemplated where no parking extensions will be allowed beyond a pre-established maximum period.

In short, the proposed measures are intended to:

- Gradually limit the space allotted to parking both in the central area and in adjacent districts, insofar as public transportation improvements capable of absorbing ensuing demand are implemented.

- Reduce maximum parking times in public places, precluding drivers from renewing the time slots, thus leaving parking space for activities requiring shorter parking periods.

- Implement differential parking rates, benefiting low demand ones.

Such measures must be coupled with the building of parking lots associated with transfer centers, or with parking lots adjacent to access highways, having good connections with central areas.

- Integral traffic Study for the city of Buenos Aires and the province of Buenos Aires. The lack of basic traffic flow data makes it imperative to rapidly conduct an integral traffic study to obtain enough information to develop a medium and long term strategy to improve traffic conditions in the city of Buenos Aires, to permit monitoring the steps to be implemented in the short term, to help develop a new parking policy, to determine the characteristics of an accident-reduction program and to promote the training of municipal

officials responsible for developing and implementing the actions resulting from the study.

- New traffic education rules. Such programs must include not only penalties to traffic law violations but also determining long-term criteria likely to promote a system of rewards and penalties surpassing current monetary amounts. In this connection, two measures are recommended to achieve the proposed goals:

  - Develop a traffic rule dissemination and awareness raising program, with time-frame defined objectives. Educational processes generally require long time periods for results to be appreciated, this fact, however, should not lead to postpone the implementation thereof. The educational program should also be driver-oriented and related to traffic law violations.

  - Driving license withdrawal program for repeat offenders. Traffic law violations must be associated with a scoring where the accumulation of marks shall involve increasing penalties in addition to monetary fines, ending with the definitive withdrawal of the license in the case of repeat violators.

- Assessment of current light signal scheduling. Such assessment must be conducted to adjust signal timings to current vehicle traffic, particularly at intersections identified as critical. The implementation of time differential programs to meet network demand, and disconnection of low demand signals at valley hours (night).

ANNEX I

THE ORDERING OF THE TAXICABS OPERATION IN THE MACROCENTRO OF THE CITY OF BUENOS AIRES

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INDEX

1. *Introduction.*

The aim of this proposal is to propose a series of regulations to the functioning of the taxicabs. These regulations are directed for the first time to the operative aspect in order to complete the ordering of the vehicular traffic previously proposed for the Macrocentro zone of the City of Buenos Aires.

It has been foreseen the implementation of this series of regulations in stages in order to allow its revision and optimization; and allow the gradual adaptation of the market to the new transport habits that are going to be developed.

Such as we have mentioned in the introduction, the main objective is to disperse the central area of the city, in this case rationalizing the operation of the taxi cabs that enter to it.

2. *The causes of the growing of the trips in taxicabs.*

From the charts of modal partition of the second part is infered that taxicab has increased its participation in the total of the trips from 7.4 to 9.4%, parallel to the subway fall in its insertion in the market from 5.9 to 3.4%; from here it is deduced that beyond all the causes that could appear is evident that the taxicab replaces the subway in some manner in the internal trips inside the Macrocentro.

Thus the taxicabs increased a 30% its participation in the transportation urban market. The larger part of the trips are made in the perimeter of the Federal Capital, not being yet made common their use in the suburbs.

Even though the 36.000 taxicabs constitute a minority regarding the total of cars that enter in the central area, it is important the occupation grade of the road they involve. The particular cars occupy the streets a short period of time upto their parking place, instead the taxicabs permanently occupy the streets with the subsequent grade of congestion.

3. *The characteristics of the taxicabs operation in the City of Buenos Aires.*

This way of transportation is absolutely under municipal jurisdiction. The objective of this work is to analyze the operative conditions of the taxicabs in the exclusive perimeter of the Federal Capital.

The users consider the taxicabs as a relatively efficient and inexpensive way of transportation. Inside the Federal Capital operate around 36.000 taxicabs, this allow an abundant services offer at any time and in all areas of the city. They provide a door to door service characterized by the relative speed regarding to other ways of transportation, because only the particular car can equal it.

The search of passengers is made circulating at low speed by streets generally narrow, in such a way the transit flow is obstructed. Once a trip is arranged the opposite situation is developed, the taxicab try to go over the section in the less possible time, so in this way it can search another client as soon as possible.

The saturation and low level comfort that the buses offered promote the use of alternative ways, in front of the obvious decline of the massive ways, the transportation alternative is in cars.

The analysis of the interrelationship between the trips in taxicabs and in particular cars is evidenced through a costs comparative chart. Together with the growing saturation of the Macrocentro of the city, grew the parking fares upto to such point of costing one parking hour between $ 1.- in the public areas (generally satured) and $ 3.- in the private parking lots, meanwhile a journey of 5 km in a taxicab costs $ 4.-[1]. In this way if to the parking costs are summed up the operative costs, it is convenient to make any trip in a taxicab which implies more than two hours of stay in downtown.

To the economical considerations already mentioned there are summed up another relevant facts, in the last years the economical crisis induced to many unemployed people with small capitals to buy a taxicab to become independent of the formal sources of work. The taxicab was one of the ways to cover the unemployed of middle class (self employment) , knowing cases of professionals driving these taxicabs.

In this way it was produced a growing in the registration numbers, accompanied by the apperance of an important quantity of illegal taxicabs that operated with total impunity. The consequence is that Buenos Aires is one of the cities with great number of taxicabs per inhabitant.

[1] It is estimated that the medium distance of a trip in a taxicab oscillates between 3 and 6 km.

Comparative chart of the number of taxicabs between different cities of the world			
City	*N° of taxicabs*	*N° of inhabitants*	*Taxicabs / 1000 inhab.*
Buenos Aires	36 000	3 000 000	12.00
Liverpool	1 090	514 000	2.12
Manchester	450	474 000	0.95
New York	12 000	8 000 000	1.50
Los Angeles	1 050	3 000 000	0.35
Washington	8 500	800 000	10.63
Seoul	35 000	5 000 000	7.00
Taipei	30 000	2 200 000	13.64
Moscow	15 000	7 500 000	2.00
Rome	5 000	3 100 000	1.61

4. *The present regulations in the functioning of taxicabs.*

Presently it has been regulated the grant of licenses but in spite of this a considerable quantity of illegal cars continue operating.

To have the license to operate implies the fullfilment of a verification routine of the vehicle technical characteristics, in this way it has been advanced in two aspects: protection of healthy competition through the restriction of the entering of new operators to the market and control of safety in the operation by means of the inspection of the vehicles functioning.

Nothing has been advanced yet in the regulation of the taxicabs operation, with the exception of the fixing of fares by the Government of the City.

5. *The state objectives and the compatibility with the user's interests.*

The state has the right to issue regulations that promote the public welfare, he must protect not only the safety of the people but also promote practises that tend to make more efficient the operation of the transportation ways.

The operative aspect can be studied from two points of view: the public and of the users.

From the public point of view the taxicab is a particularly inefficient way of transportation. Several are the adverse characteristics of this way of transportation:

- It is used a vehicle driven by a person to carry generally only one passenger.
- It is unnecessary increased the use of the roads due to the operative manner of the Buenos Aires taxicabs of searching passengers at low speed (it is not yet generalized the habit of requiring the taxicab services by phone).
- It is evidenced since the operative manner previously pointed out a high consumption of non renewable natural resources, high ratios of environmental contamination and accidents.

The state objective shall be to rationalize this operative system in reason of the limited capacity of the roads, of the need to priorize the public transportation and to promote the preservation of urban environment.

The users by the other part require an answer to their needs of transportation, presently the taxicab offers an acceptable comfort at a reasonable price, guaranteeing through its large offer of services the access of the population at any time and in any place. This esential characteristic feature shall be protected because beyond of the adverse circumstances of its operation, its use is generalized and form an important part of the urban transportation system of the city.

The state through his power of issuing regulations must tend to:

- To promote the use of public ways of transportation.
- To make agile the transit in the Macrocentro eliminating the circulation of slow vehicles and restraining the massive access of taxicabs in rush hours.
- To promote a more rational operation of the taxicabs diminishing in this way fumes emanations and toxic particles, and the propagation of bothersome noises.
- To limit the present wild grade of competition, assuring in that way a great safety in the operations.

6. *The proposal of the ordering in the taxicabs operation.*

Based in the premises previously pointed out the present proposal tends to achieve these objectives.

The most important points of the project are the following:

- Division of the city in two operative areas of taxicabs services.
- Determination of fixed stops to pick up passengers in the Macrocentro area.
- To grant the exploitation of the fixed stops to be established through the payment of a monthly fee (optional in function of the objectives of the State in the subject).

It is proposed the division of the city in two areas, the first of them limited by the avenues: Belgrano, Jujuy, Pueyrredón, del Libertador, Madero and Huergo. The second area encompass the rest of the city.

The operation of the taxicabs shall be parallely divided to the establishment of said areas.

The system shall function in the following way:

- The present black and yellow cabs (BY) shall have their operation area restricted to the city zone out of the Macrocentro, being allow to enter to it only to discharge passengers. That is to say that they cannot load passengers in the restricted area.
- In the Macrocentro zone shall exclusively operate black and red taxi-cabs (BR) with special license . These shall be authorized to load and unload passengers in any area of the city.

Licenses shall be granted for two shifts: from 6 to 14 hr. and from 14 to 22 hr., being the time from 22 and 6 hr. free for the activity.

That is to say that the city remains divided between 6 and 22 hr. in two zones: one external completely free (similar to the present situation) and another central, in coincidence with the Macrocentro, where all the taxicabs have access to unload passengers but only the vehicles BR are authorized, in the authorized stops, to load passengers.

The taxicabs operation in the restricted area, in this first stage, shall have the following characteristics:

- There shall be established fixed stops with limited capacity, adequately delimited in order not to jam the transit of the streets.

- The vehicles BR that enter to the zone could only load passengers from the fixed stops, looking for place in some of them to wait for the passengers.

- The vehicles BY that enter to the area to unload passengers shall leave empty upto to the limit of the restricted area. Regulation also includes the taxicab services requested by phone which cannot operate in this area.

- The passengers unloading shall be made in specialIly delimited areas in each block in order not to stop the transit flow.

The area previously described is shaped by approximately 500 blocks, it is foreseen the installation of enough stops in order to avoid that the persons walk more than 200 meters to search the nearest one. In this first stage the stops shall be delimited over 200 meters approximately with an average capacity of 12 cars. Being the total system capacity of around 6.000 vehicles simultaneous. It is considered that in the afternoon band (the one with large demand) it could be offered enough spaces considering the rotation time of the trips, instead in the morning schedule the system shall operate under the saturation level without granting all the foreseen spaces. So, the possible spaces demand is around 11.000.

7. *The analysis of the proposed measures.*

The foreseen measures shall be analized from three points of view: the state, the users and the operators.

From the point of view of the state it is achieved to order and regulate for the first time the taxicabs operation in the more overloaded area of the city. It can be reduced excesive costs by transit congestion, the sound and environmental polution ratios are lowered and it is obtained an important money collection by fee granting.

The users shall be the direct beneficiaries of the dispersion of this area, specially those that use massive ways of transportation. The used times in crossing the Macrocenter shall be remarkably diminished when rising the level service of the streets. As a disadvantage it is included to walk in search of the nearest stop, but this fact is alleviated by the numerous quantity of stops that considerably reduce the distance to walk, not surpassing this the 200 mt.

The BY taxicabs operators shall see diminish its working area by operating only in the free area of the city and during the night in the central area; but by other part the competition in these areas shall be reduced by deriving numerous vehicles towards the restricted zones. The smaller operation zone is compensated by the diminishing of the competition of other taxicabs.

The BR vehicles shall pay a monthly fee within receiving as counterpart a fare increase but they shall assure themselves a market band of important demand. By the other part they shall see reduce their operative costs by increasing their commercial speed in the Macrocentro area and avoid the circulation at low speed in the searching of passengers.

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